

Terms of Reference

Technical Assistance to Develop Viable Business Models for Renewable Energy Options and Conversion of Fish Processing Facilities to Renewable Energy Operations

1.0 Background and Justification

The fisheries sector relies on the use of energy and to a great extent on fossil fuels which makes it highly sensitive to energy costs, especially taking into consideration fuel cost instability. While post-harvest's, processing's and distribution activities' demand for energy is significant, the catching sector, having few short-term alternatives to fossil fuels, is especially dependent on fuel and vulnerable to the fuel price fluctuations. Despite the challenges that the sector faces, including strong dependence on fossil fuels, small-scale fisheries are increasingly recognized for their contribution to sustainable food systems and the opportunities they present for sustainable development. There is need to fully assess and understand the opportunities and challenges of applying renewable energy technologies in small-scale fisheries of the Caribbean to reduce carbon footprint, as an indispensable baseline assessment to inform next steps in renewable applications in the fisheries sectors of project countries.

It is important to identify specific areas of renewable energy interventions with demonstrable on-the-ground pilots, the application of knowledge and capacity acquired, and the generation of lessons and results that will facilitate replication and upscaling of the transition from fossil fuels to renewables/low carbon sources across the value chain in Caribbean fisheries and aquaculture sectors. Linked to this, given the potential negative impacts on biodiversity and ecosystems, would be development of a process to track the renewable energy options to be implemented at the selected facilities.

Among the many different value chains of the fisheries and aquaculture sectors of the Caribbean, there are points along some chains which may present a more favourable enabling environment for the demonstration of transition from fossil fuels to cleaner energy, thus presenting better chances of project success. These must be assessed, and criteria developed for a transparent selection process of those value chains that will receive project support. Selection will consider fisheries value chains which collectively will cover all 8 countries. There might be a fishery that is relevant for 3 countries, another that is relevant for another 3, and one that is relevant for the other 2 countries, while recognizing there may be overlaps of multiple fisheries between countries as well. The intention is to demonstrate that value chains of all 8 countries would be addressed, even if not the same value chains for all 8 target countries.

Fishers and aquaculturists in project countries do not possess sufficient knowledge on renewable and cleaner energy options and application to assist in their decision to embark on the transition. Targeted and gender-responsive interventions must be implemented to impart knowledge to resource users in renewable energy options, suitability at different points of the value chain, initial transition costs and need for capital investment, rate of return to recover initial capital investment,

know-how in the installation of renewable energy technology, maintenance, and adaptability at small operational scales.

The CRFM is implementing the STAR-Fish – Sustainable Technologies for Adaptation and Resilience project has been approved by Global Affairs Canada (GAC)¹ with the CRFM as Project Executing Agency, to be implemented in the ODA-eligible countries. The overall object of the project is to improve the resiliency of Caribbean fisheries and aquaculture sectors by promoting clean energy transition while strengthening gender-responsive governance arrangements for the adoption of renewable energy solutions and technologies. The Caribbean Regional Fisheries Mechanism (CRFM) was established in 2003 as an institution of CARICOM, to promote and facilitate the conservation, management and responsible utilization of the region's fisheries and other living marine and aquatic resources for the economic and social benefits of the people of the region.

The Consultant team or firm will work under the general direction of the STAR-Fish project coordinator to facilitate collaboration with appropriate national agencies, fisherfolk organisations and/or regional agencies, for energy awareness training and develop and implement a Renewable Energy Awareness Campaign, as part of the above-mentioned project as per the terms and conditions outlined below.

2.0 Objectives of the Consultancy

The objective is to drive the introduction of new and renewable energies across the fisheries and aquaculture value chain that will shape the formulation and application of successful business models by:

- Identifying new and renewable energy options (e.g., solar drying, battery storage for vessels, solar-powered ice production, hybrid refrigeration/freezing systems) and analysing key points along the value chains to determine where interventions would be most effective, ensuring that environmental safeguards are applied and options are socially acceptable.
- Evaluating existing business models in all eight (8) project countries,
- Identification of four (4) fish processing operations, in at least four (4) project countries, for conversion of processing operations to renewable energy, assessing financial feasibility, governance arrangements, and barriers to inclusive participation by women, youth, Indigenous Peoples, and vulnerable groups.
- Developing and customising four (4) viable business models that enable selected fish processing facilities to transition to renewable energy operations in a financially

¹ The Global Affairs Canada (GAC), under the leadership of the Minister of Foreign Affairs; the Minister of Export Promotion, International Trade and Economic Development; and the Minister of International Development, is responsible for advancing Canada's international relations, including, inter alia: Developing and implementing foreign policy; Fostering the development of international law, international trade and commerce; Providing international assistance (encompassing humanitarian, development, and peace and security).

sustainable, environmentally responsible, and socially inclusive manner, with clear pathways for equitable access to benefits.

3.0 Scope of Works

Under the direction of the STAR-Fish Project Coordinator and in collaboration with the CRFM/PMU, the Consultant team or firm will be responsible for the following tasks:

3.1 Inception and Planning

- Participate in a briefing session with the CRFM/PMU to clarify objectives, methodology, and outputs.
- Prepare an **Inception Report and Work Plan** detailing methodology, schedule, and engagement plan.
- The Inception Plan must describe how Environmental and Social Safeguards (ESS) will be mainstreamed, including inclusive stakeholder engagement, Indigenous Peoples' participation, gender/disability considerations, culturally appropriate tools, and environmental risk screening.

3.2 Identification of Renewable Energy Options

- Identify and describe renewable energy options applicable to fisheries and aquaculture (e.g., solar drying, solar-powered ice production, battery systems for vessels, energy-efficient motors).
- Analyse the most strategic intervention points across the value chains.
- Assess technical feasibility, economic viability, and environmental sustainability, with data disaggregated by gender where possible.

3.3 Evaluation of Existing Business Models

- Review and assess existing business models for renewable energy conversion of fish processing facilities, within eight (8) project countries.
- Identify strengths, weaknesses, and barriers related to finance, governance, and inclusivity.
- Document relevant case studies from within and outside the Caribbean.

3.4 Identification of four fish processing operations for conversion

- Identify and profile fish-processing operations across project countries using agreed selection criteria (e.g., processing volume, energy intensity, management willingness, site readiness, social inclusion potential).

- Shortlist facilities through desktop review and stakeholder verification; collect baseline data (energy/fuel use, equipment inventory, operational hours, workforce composition) using a standardized questionnaire.
- Conduct site assessments (field visits or virtual validation) to evaluate technical feasibility, financial readiness, and environmental/social risks, ensuring workforce and community data are sex-disaggregated and barriers to participation by women, youth, Indigenous Peoples, and persons with disabilities are recorded.
- Score and rank candidates using a composite readiness matrix (technical, financial, governance, ESS, and social-inclusion criteria) and apply sensitivity checks for data gaps.
- Recommend four final plants/facilities (one per selected country where feasible) with concise justification, indicative intervention scale, preliminary Capital Expenditure/Operating Expenditure ranges, ESS flagging and an action checklist to prepare each site for the follow-on technical assessment and business-model development.

3.5 Development of Viable Business Models

- Develop/customise business models for conversion of fish processing operations to renewable energy.
- Incorporate financial sustainability, governance structures, and risk-sharing mechanisms (e.g., PPPs, cooperatives, blended finance).
- Integrate ESS requirements, including safeguards against exclusion of vulnerable groups and risks of environmental harm (e.g., battery disposal, waste).

3.8 Stakeholder Engagement and Validation

- Facilitate national and regional consultations to validate findings.
- Ensure workshops are inclusive, gender-responsive, and accessible to Indigenous Peoples and vulnerable groups.

3.7 Draft Communication Product

- Develop draft communication products (e.g., press release, case studies, briefs, fact sheets, etc.,) that will be finalized by the PMU.
- Ensure alignment with the STAR-Fish Communications Strategy for dissemination.

3.8 Reporting and Integration

- Produce draft and final consultancy reports consolidating findings, renewable energy options, business models, and stakeholder engagement outcomes.
- Include annexes such as ESS compliance checklist, gender analysis, stakeholder consultation records, and case studies.

4.0 Expected Outcomes and Deliverables

Deliverable 1: Inception Report and Work Plan

- Methodology, work schedule, and engagement plan.
- Description of how ESS will be mainstreamed (gender, Indigenous Peoples, disability inclusion, environmental safeguards).

Deliverable 2: Renewable Energy Options Report

- Identification of most appropriate renewable energy technologies and intervention points along the value chains.
- Analysis of environmental, social, and gender implications of the options.

Deliverable 3: Business Models Evaluation Report

- Assessment of existing business models for RE conversion of fish processing operations.
- Evaluation of feasibility, governance arrangements, and inclusivity for women, youth, Indigenous Peoples, and small-scale operators.

Deliverable 4: Draft Viable Business Models for Four Candidate Facilities

- Customised models demonstrating financial sustainability, inclusivity, and ESS compliance.
- Recommendations for co-investment, risk-sharing, and financing mechanisms.

Deliverable 5: Workshops and Knowledge Products

- National and regional validation workshops conducted and documented.
- Communication product delivered, ensuring accessibility for women, youth, Indigenous Peoples, and vulnerable groups.

Deliverable 6: Final Technical Report

- Consolidated report covering renewable energy options, evaluation of models, draft models, stakeholder validation, and ESS compliance.
- Annexes including stakeholder engagement records, CRFM ESS checklist, and participant list disaggregated by sex and age.

5.0 Project Schedule and Milestones

Deliverable	Description	Due Date	% Payment
1. Inception Report & Work Plan	Methodology, timeline, and engagement plan; includes clear approach for applying ESS, gender sensitivity, Indigenous Peoples' participation, and accessibility for vulnerable groups.	November 2025	12%
2. Renewable Energy Options Report	Identification of appropriate renewable energy technologies and analysis of intervention points in fisheries/aquaculture value chains; integrates environmental safeguards, gender analysis, and Indigenous/local knowledge.	January 2026	30%
3. Business Models Evaluation Report	Review of existing models for RE conversion of fish processing operations; assessment of inclusivity, financial feasibility, and barriers to access for women, youth, Indigenous Peoples, and small-scale operators.	March 2026	20%
4. Draft Viable Business Models	Customised business models for RE conversion developed; include financial sustainability, risk-sharing mechanisms, and measures for ESS compliance, environmental safeguards, and equitable participation.	April 2026	20%
5. Workshops & Communication Products	National and regional validation workshops convened; knowledge products developed; workshops and outreach conducted in culturally appropriate, gender-responsive, and inclusive formats accessible to Indigenous Peoples and vulnerable groups.	May 2026	8%
6. Final Technical Report	Consolidated report including all analyses, draft models, validated business models, and stakeholder engagement outcomes; dedicated section on ESS compliance and gender/social inclusion; annexes include disaggregated consultation records and CRFM ESS checklist.	July 2026	10%

6.0 Reporting Requirements

The consultant team or firm will present the deliverables following the schedule established in section 5 of these terms of reference. The deliverables must include reports in Word, PowerPoint presentation, and other documents used as the basis of the analysis (including other formats such as Excel spreadsheets, etc. as applicable) and a folder with the list of bibliographic references used to develop the analysis. All materials must be delivered in English. All reports, studies, plans, drawings, source code, technical data, specifications, and any other material prepared by or worked upon by the consultant team or firm exclusively for the CRFM under this Agreement are the sole and exclusive property of the CRFM and as such the CRFM has exclusive title, rights, and interest in all such material including the right of dissemination, reproduction, and publication. The consultant team or firm will also work closely with the Regional Project Coordinator and the Environmental and Social Safeguards Specialist of the STAR-Fish Project on the assignment.

7.0 Acceptance Criteria

Payments will be authorized once the CRFM accepts the deliverables specified by the TOR. The CRFM will have up to three weeks to provide written comments/recommendations to the consultant(s) reports. Unless previously determined, the CRFM will generally accept the deliverables once the consultant team or consulting firm confirms the following: (i) receipt and additional inclusion of comments/recommendations in a revised version and (ii) provision of date for presentation of the revised versions of the submitted deliverables. The consultants are expected to include these comments two weeks after receipt.

8.0 Consultant Efforts and Required Skills

Applicants should meet the following requirements:

Sustainable Energy Specialist

- Possess suitable/appropriate qualifications in energy management, engineering and/or related areas
- At least five (5) years' experience in renewable energy technologies, sustainable energy consulting, and business models.
- Experience with renewable energy integration in fisheries/food systems preferred.
- Experience in examination of technology, national policies and financing available to support the application of renewable/low carbon energy technology (minimum 3 assignments)
- Knowledge of the international and Caribbean sustainable energy landscape is an advantage.
- Experience with gender mainstreaming and energy policy in the Caribbean is an added value.

Business/Finance Specialist

- At least five (5) years' experience in financial modelling, PPPs, cooperative ownership models, and green finance.
- Knowledge of inclusive financing mechanisms, particularly gender-responsive finance.

Fisheries/Aquaculture Specialist

- At least five (5) years' experience in value chain analysis and post-harvest/processing operations.
- Demonstrated knowledge of Caribbean fisheries management policy and value chain structures.

9.0 Application and Selection Procedure.

Interested consulting teams or firms are invited to submit their Proposal outlining observations on these Terms of Reference, understanding of the objectives of the assignment, details of methodology to be applied, proposed work plan and timeline, personnel to be involved, skills and Curriculum Vitae of all proposed team members, declaration of availability, declaration of no conflict of interest, and tax inclusive price proposal and all other associated costs.

Proposals will be evaluated using a Quality and Cost-Based Selection procedure, in which the Technical Proposal can be awarded a maximum of 70% of the evaluation score and price a maximum of 30% of the evaluation score.

10.0 DURATION

The consultancy should be conducted over 9 months and must be completed no later than the end of July 2026.

11.0 COST OF THE CONSULTANCY

The budget included in this section details the level of effort estimated for the activities programmed in this consultancy.

Table 1 – Consultancy Budget (CAD)

CONCEPT	Months (estimated)	(CAD)
Consulting Fees	9	\$70,000.00
Reimbursable Expenses (Travel and other costs)	9	\$30,000.00
Total		\$100,000.00

